Pilot Trial of Telemedicine as a Decision Aid for Patients with Chronic Wounds

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Abstract

The study goal was to evaluate the impact of the telemedicine consult on patients with chronic wounds. Thirty patients from long-term care skilled nursing facilities, referred to the ambulatory wound care program for wound assessment and preparation of management plans, were the subject of this prospective, randomized trial. To facilitate communication with a surgical wound care specialist, telemedicine feedback was provided prior to face-to-face consultation to 15 patients. The telemedicine consult included (1) wound assessment, (2) rationale for the suggested wound management with emphasis on wound risk projections, and (3) prevention and benefits of surgical intervention. This was communicated to the patient by the field wound care nurse. The telemedicine impact was measured by assessing the duration of the subsequent face-to-face consultation and patient satisfaction with further care decisions as well as by validation of a decisional conflict scale. The average duration of the face-to-face consultation was 50 ± 12 minutes versus 35 ± 6 (p < 0.01) minutes for patients subjected to the telemedicine feedback preceding the direct contact with the specialist. The telemedicine consult was found to be a useful aid in increasing the satisfaction rate from care decisions ultimately made during the direct consult (acceptance rate 93% vs. 47% in those subjected to treatment without the intermediate telemedicine consult, p < 0.01). The decisional conflict as a state of uncertainty about the course of action to take was reduced in patients subjected to telemedicine decision aid. The average Decisional Conflict Scale score was 14 ± 1.73 in patients subjected to telemedicine feedback as opposed to 35 ± 4.26 (p < 0.001) in no-telemedicine contact. The telemedicine consult preceding face-to-face evaluation improved patient satisfaction and understanding of their care as well as increased the perception of shared decision making regarding the wound care.

Key words: *decision aid, chronic wounds, Decisional Conflict Scale*

Introduction

Chronic wounds increasingly continue to be an important and costly healthcare concern across all (home, ambulatory, hospital) care settings.[1] Frequently, institutionalized and immobile patients with many medical problems who are prone to develop nonhealing wounds have difficulty understanding and implementing wound preventive and management measures, and accessing wound care specialists.[2] Preliminary studies demonstrated that outreach wound care programs augmented by the store-and-forward type of telemedicine consultations are accurate and efficacious measures facilitating access to appropriate specialists for patients in rural and urban settings, reducing costly, emotionally and physically stressful transportation and shortening the time needed for implementation of the management plan.[3,4] Current chronic wound management options include conservative modalities, surgical intervention, and lifestyle changes.[1,2] Sometimes the most effective of these options are those that are invasive, involving risks of serious side effects or permanent alteration of quality of life (e.g., amputative surgery in a patient with diabetic foot problems).[5] Therefore, in many instances chronic wound management decisions are patient preference- and resource-driven. Patients must balance the potential benefit of intervention against risk of adverse side effects, and changes in quality of life. Before patients can adequately make such decisions, they must be well informed and fully comprehend the benefits, risks, and consequences associated with available options. Many well-known factors in the clinical setting impede informed decision making: significant demands on physicians' time, incomplete and often conflicting medical data, and rapidly changing scientific evidence and consensus recommendations.[1,6,7]

Table 1. Demographic Parameters and Wound Epidemiology

	NO TELEMEDICINE (n = 15)	TELEMEDICINE INTERVENTION (n = 15)	p VALUE
Patient characteristics			
Age (years), range 37–78 years, mean (±SD)	53.9 (± 10.4)	54.9 (± 10.8)	0.8
Men/women	7/8	7/8	N/A
The nature of wound			
Pressure sore	8	10	N/A
Venostasis ulcers	1	1	N/A
Arterial ulcers no diabetes	1	0	N/A
Diabetic foot	5	4	N/A

Telemedicine consults have been shown to facilitate the communication between care providers and surgical wound specialists.[3,4] However, because there are numerous examples demonstrating that patients actually involved in the decision-making process experience better outcomes, the assessment of impact of the telemedicine consult prior to the face-to-face consult on the decision-making process seemed to provide clinically relevant information and added another dimension to our knowledge about the potential of telemedicine.[8]

Materials and Methods

The study population included 30 (n = 30) patients with problematic, nonhealing wounds referred to the wound care program and surgical consultant by their primary care physicians; these patients were seen from January 2003 through December 2005.[3] Problem wounds were defined as those that did not heal for at least 6 weeks from the day of injury or wound diagnosis and commencement of the initial treatment (not under the auspices of the wound care specialist). Although all patients were of poor health and life-functional status, those selected for this study were alert and intellectually interactive. Both the telemedicine intervention and "control" group were comparable by demographic parameters (*Table 1*).

Referred patients were seen for the first time within 24 hours by a wound care program nurse. Prior to visiting the patient, the nurse was given a sealed envelope with the randomization instructions (telemedicine consult versus nontelemedicine involving evaluation, there were 15 patients in each group). No clinical criteria influenced the assignment to a study group. The nurse obtained the history, assessed the patient, and obtained wound data including the standardized photograph.[9] One week later, the nurse visited all patients again for reassessment. The overall time the field wound care program nurse spent with patients in both groups was the same: approximately 45 minutes. The appointment with the surgeon was made on the date the initial consultation was received. All patients were seen in face-to-face consultation by a surgical specialist (senior author, board-certified plastic surgeon) within 2 weeks from the initial consult request. The duration of the face-to-face consultation was determined by the patient. Once all issues were discussed as per discretion of the surgeon, the patient was asked if he/she had any questions. The consultation was considered complete if the patient had "no more questions." Patients randomized for the telemedicine

Table 2. The Satisfaction with Decision Scale

I am satisfied with the overall process of my wound management	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I am satisfied with my decision	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I fully accept consultant recommendation	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
Consultant spent adequate time with me during the face-to-face visit	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
The telemedicine-based feedback was useful and helpful in my decision-making process	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree

consult received feedback prior to face-to-face consultation. This information was communicated to them by a nurse during the subsequent reassessment visit. Feedback information included discussion of findings, including showing the patient his or her wound photograph and reading a synopsis of the surgeon's impression. The synopsis also included questions regarding such quality-of-life issues as pain and nutrition. One to 2 weeks after the direct consultation with a surgical wound specialist, all patients completed a questionnaire regarding their satisfaction with the care proposed, acceptance of the management plan (The Satisfaction with Decision Scale), and the state of uncertainty (The Decisional Conflict Scale) (*Tables 2 and 3*).[10,11] Initial surgical specialist management recommendations

Table 3. The Decisional Conflict Scale

Now, thinking about the choice you (are about to make/just made), please look at the following comments some people make when deciding about treatment. Please show how strongly you agree or disagree with these comments by *circling the number* from 1 (strongly agree) to 5 (strongly disagree) that best shows how you feel about the decision you (are about to make/just made).[10,11]

Decisional uncertainty					
This decision was not easy for me to take	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I'm sure what to do in this decision	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
It's clear what choice is best for me	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
Factors contributing to uncertainty					
I'm aware of the choices I have to resolve my wound problem	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I feel I know the benefits of the treatment suggested	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I feel I know the risks and side effects of the treatment offered	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I do not need more advice and information about the choices	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
Perceived effective decision making					
I feel I have made an informed choice	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
My decision shows what is most important for me	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I expect to stick with my decision	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree

(conservative vs. surgical intervention such as wound debridement or debridement and reconstructive surgery) were similar in both groups. Surgery was recommended in 10 of 15 cases (67%). Descriptive statistics were calculated for study variables (means, standard deviations, numbers, and percent wherever applicable). Comparisons between groups were conducted through analysis of variance.

Results

This preliminary study provides evidence that the telemedicine consult as the decision aid for patients referred for chronic wound management is effective, as evidenced by the shorter duration of the face-to-face contact requirement and the higher acceptability rate of recommended measures. The mean consultation duration was significantly different between both groups (35 ± 6 for the telemedicine intervention vs. 50 ± 12 minutes for the control, no-telemedicine feedback group, $p < 0.01$). The majority of patients subjected to telemedicine feedback were fully accepting recommendations resulting from the face-to-face encounter with the wound care surgical specialist (93% received a total of 5 points on the Satisfaction with Decision Subscale), and 47% of patients (χ^2, $p < 0.01$) in the no-telemedicine intervention group received the same score (*Tables 2 and 3*). The type of the initial management recommended (conservative vs. surgical) by the consultant during the face-to-face encounter had no bearing on the Satisfaction with the Decision and Decisional Conflict Scale scores in either group of patients (*Table 4*). All patients stated that the telemedicine feedback improved their understanding of their problems and the rationale for surgeon's recommendation, and was useful for their decision-making process. On the other hand, the level of uncertainty regarding care recommendations and decisional conflict was higher in a group not prepared for the face-to-face consultation with telemedicine-based "priming." The average Decision Conflict Scale score was 14 ± -1.73 in the telemedicine intervention group and 35 ± 4.26 in the no-telemedicine-based feedback group ($p < 0.001$, *Table 4*).

Table 4. Satisfaction and Decisional Conflict Scale Scores vs. Type of Management Proposed

	TELEMEDICINE (n = 15)	NO TELEMEDICINE (n = 15)	p VALUE
Satisfaction with Decision score			
Surgery 10/15	1.2 ± 0.63	3.0 ± 1.63	0.004
Conservative 5/15	1.0 ± 0	1.6 ± 1.34	0.347
Total	1.13 ± 0.52	2.53 ± 1.64	0.004
Decisional Conflict Scale score			
Surgery 10/15	14.0 ± 1.7	36.7 ± 3.77	<0.001
Conservative 5/15	14.0 ± 2.0	31.6± 3.13	<0.001
Total	14 ± 1.73	35 ± 4.26	<0.001

Discussion

The results of this preliminary study suggest that the telemedicine-based feedback from the prospective consultant was received well by patients. The introduction of this intermediate step seemed to educate patients and foster the sense of security and bond with the consultant. Interactive health communication has great potential to improve true or perceived quality of care.[7] In this instance, patients with chronic wounds and frequently other co-morbidities are frail and particularly prone to feel insecure and fear that their concerns may not be adequately addressed. Therefore, it is concluded that telemedicine feedback is a useful aid in increasing patient comfort with their care, enhancing perception that the surgical specialist is familiar with their condition, able and willing to control the management process, and willing to involve them in the decision-making process. Noteworthy is the higher rate of satisfaction and less uncertainty regarding the recommended course of care in patients subjected to telemedicine despite the shorter average direct consultation time. It was observed that efforts directed toward increasing the frequency of communications, not necessarily the length of communication between the physician and the patient, enhance patient participation in decision-making, because patients tend to withdraw from communication that is of a very technical nature with no health-related quality-of-life component.[12] Intermediate, although without direct physician–patient communication, may help to diffuse the aura of rushed "technical" discussion and reduce patient uncertainties.[6,12] Fears that "anonymous" electronic communication (lack of direct personal interaction) between the patient and the physician will be rejected by patients as impersonal are not substantiated by this as well as other studies.[13,14] In teledermatology, a high satisfaction rate of the telemedicine service was rated by up to 75% of patients, and telemedicine advice only increased patient's desire to see a physician for a face-to-face consultation.[14]

In summary, the telemedicine feedback prior to face-to-face consultation with a surgical specialist for patients with chronic wounds appears to be a useful management aid; it is well received and increases the level of patient comfort with their care-related decisions.

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